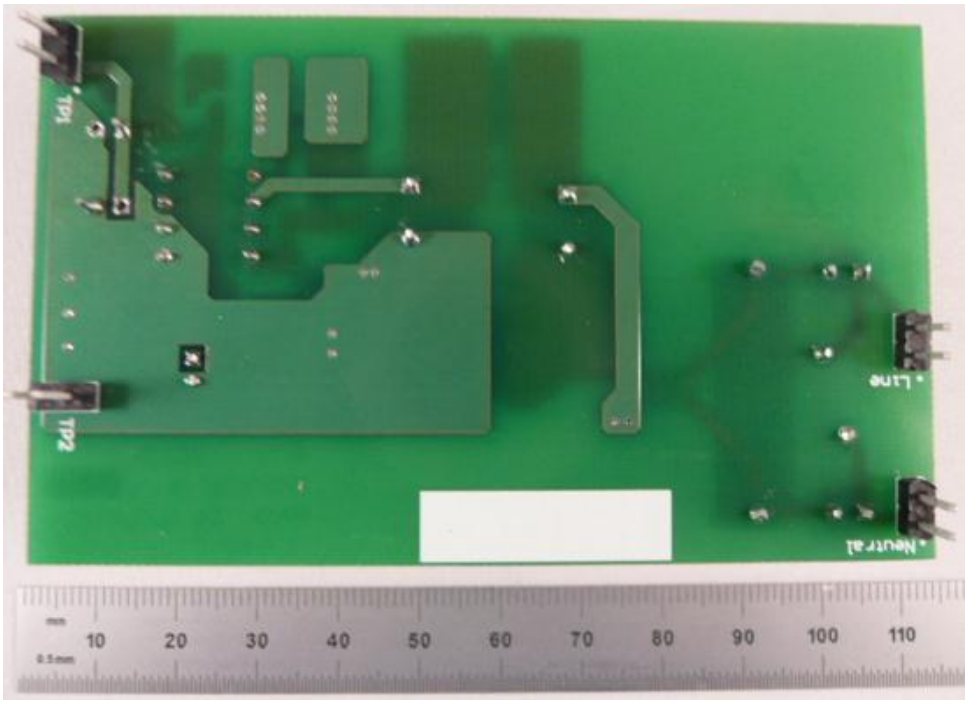
1 Photo

The photographs below show the PMP9061 Rev A assembly. This circuit was built on a PMP9061 Rev A PCB.

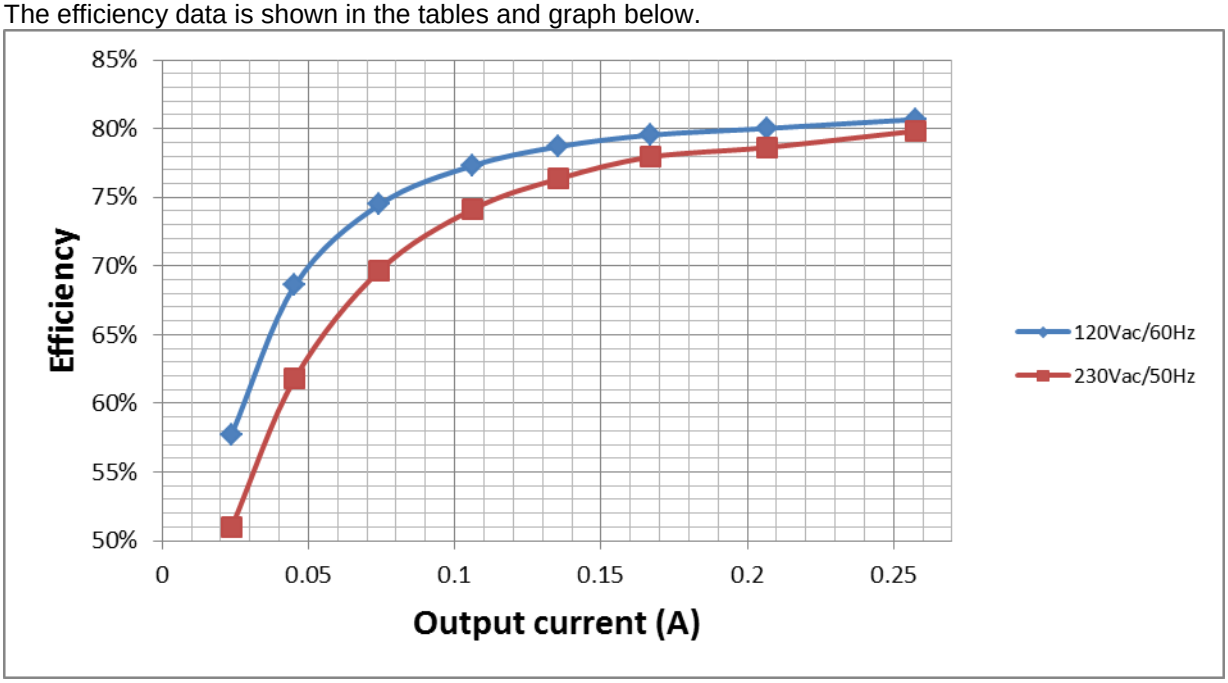
Top side

Bottom side



2 Converter Efficiency

The efficiency data is shown in the tables and graph below.



V_{in}=120V_{AC}/60Hz

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
120.2	83.76	5.156	16.16	0.2574	4.159584	0.996416	80.67%
120.23	70.1	4.174	16.16	0.2067	3.340272	0.833728	80.03%
120.25	59.18	3.391	16.15	0.167	2.69705	0.69395	79.54%
120.27	50.88	2.779	16.14	0.1355	2.18697	0.59203	78.70%
120.29	43.06	2.215	16.14	0.1061	1.712454	0.502546	77.31%
120.24	34.68	1.611	16.15	0.0743	1.199945	0.411055	74.48%
120.26	27.65	1.068	16.16	0.04533	0.732533	0.3354672	68.59%
120.27	23.07	0.6644	16.19	0.02369	0.383541	0.2808589	57.73%
120.29	19.227	0.13382	16.34	0	0	0.13382	0.00%

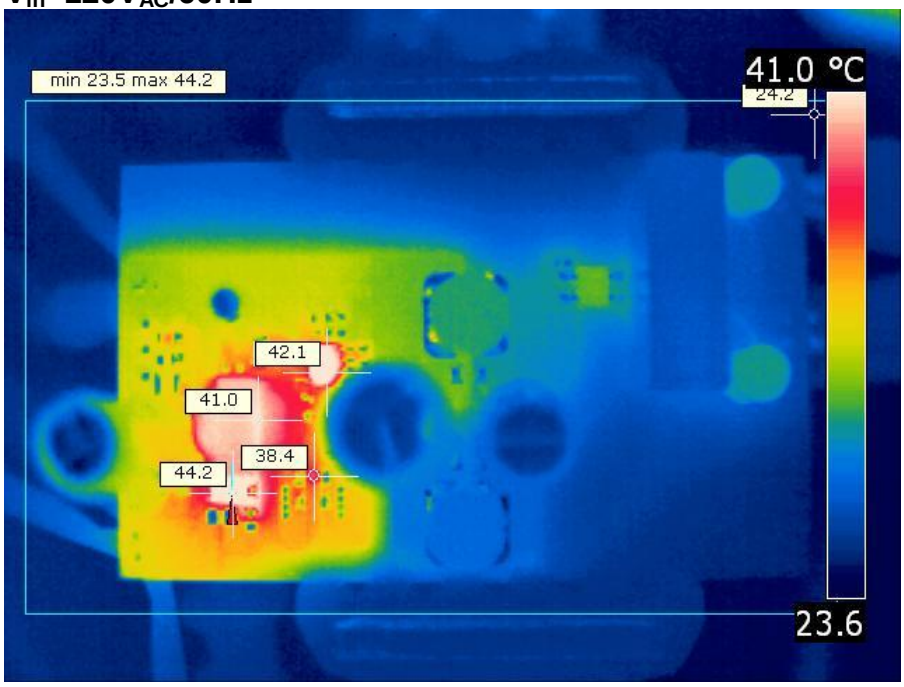
V_{in}=230V_{AC}/50Hz

Vin(V)	Iin(mA)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	Losses(W)	Efficiency (%)
230	58.76	5.214	16.17	0.2574	4.162158	1.051842	79.83%
230	51.58	4.245	16.15	0.2067	3.338205	0.906795	78.64%
230	46.66	3.458	16.14	0.167	2.69538	0.76262	77.95%
230	42.63	2.864	16.14	0.1355	2.18697	0.67703	76.36%
230	39.11	2.31	16.14	0.1061	1.712454	0.597546	74.13%
230.1	35.75	1.721	16.14	0.0743	1.199202	0.521798	69.68%
230.1	33.18	1.185	16.15	0.04537	0.732726	0.4522745	61.83%
230.1	31.57	0.7514	16.17	0.02369	0.383067	0.3683327	50.98%
230.1	30.42	0.18648	16.45	0	0	0.18648	0.00%

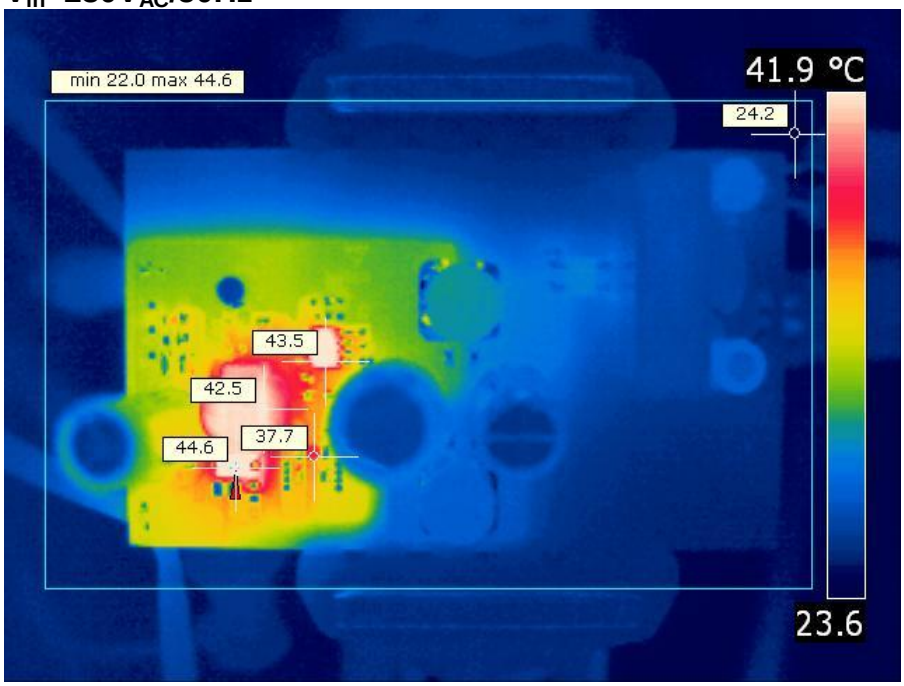
3 Thermal Images

The thermal images below show a top view and bottom view of the board. The ambient temperature was 20ºC with no forced air flow. The output was at full load: 16V/0.25A.

V_{in}=120V_{AC}/60Hz



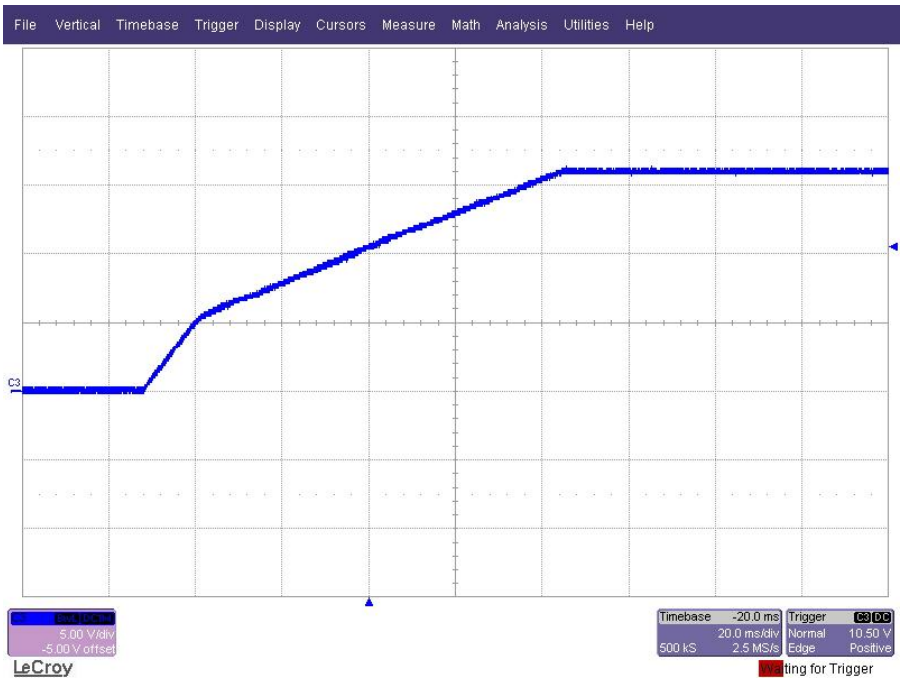
V_{in}=230V_{AC}/50Hz



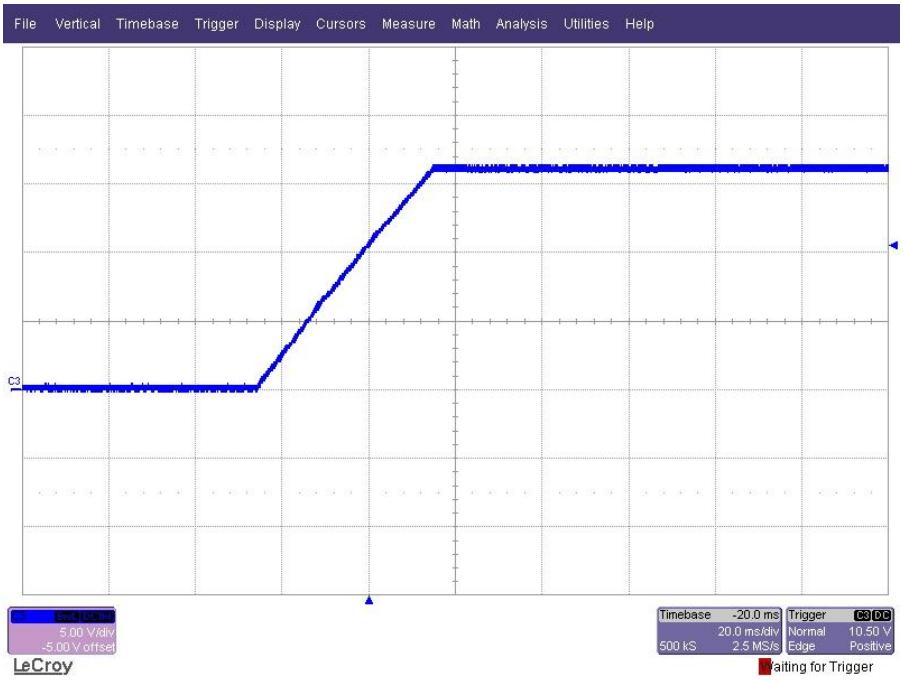
4 Startup

The output voltages at startup are shown in the images below.

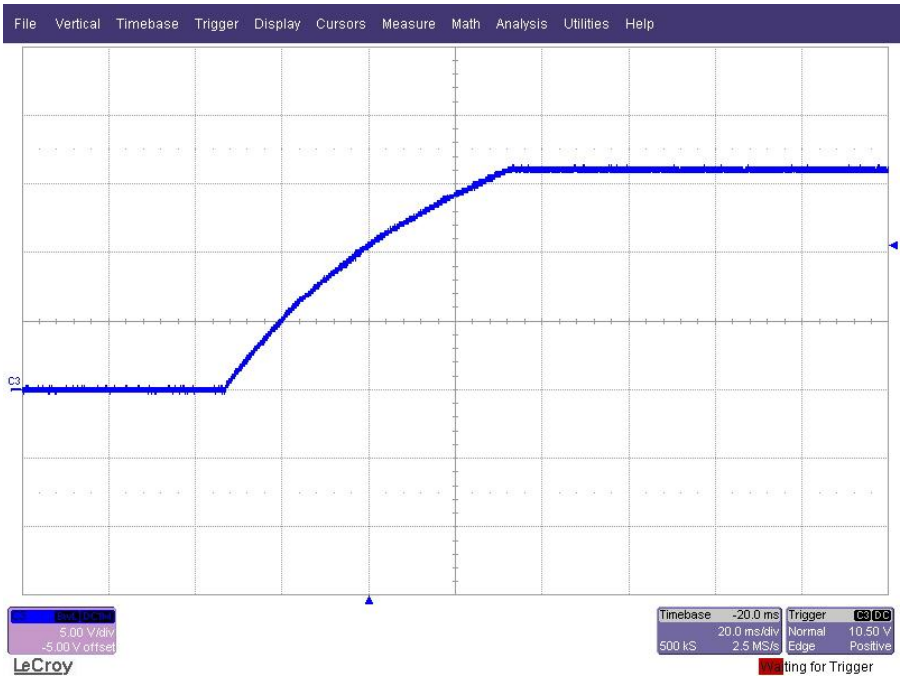
4.1 Start Up @ 85V_{ac}: 16V/0.25A.



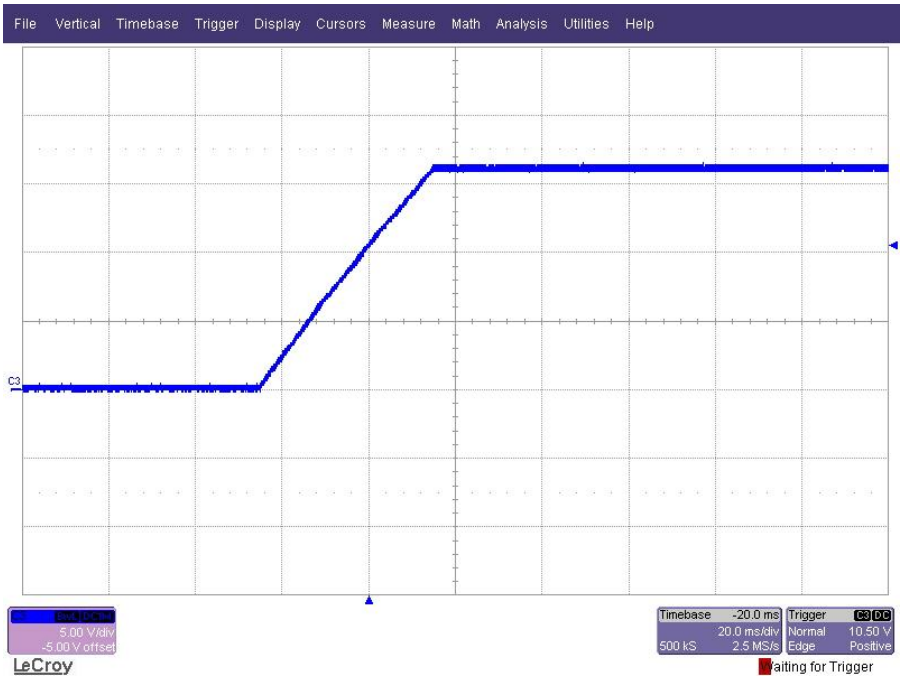
4.2 Start Up @ 85V_{ac}: no load.



4.3 Start Up @ 230V_{ac}: 16V/0.25A.



4.4 Start Up @ 230V_{ac}: no load.



5 Turn off

The output voltage at turn off transient is shown in the image below at full load (15V/0.25A) and a $85V_{ac}$/60Hz input.

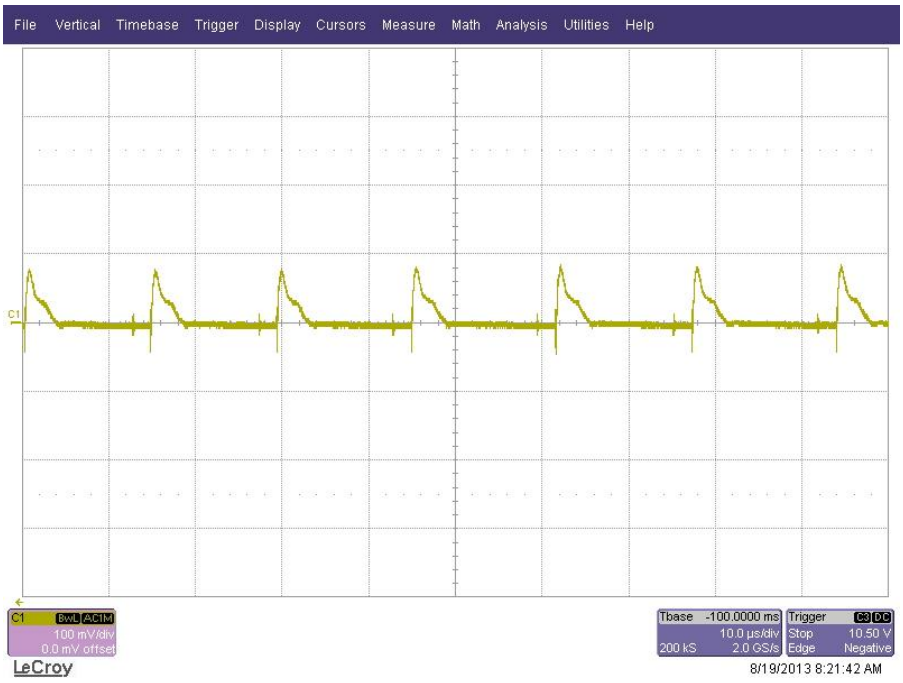
5.1 Turn off @ $85V_{ac}$: 16V/0.25A.

5.2 Turn off @ $230V_{ac}$: 16V/0.25A.

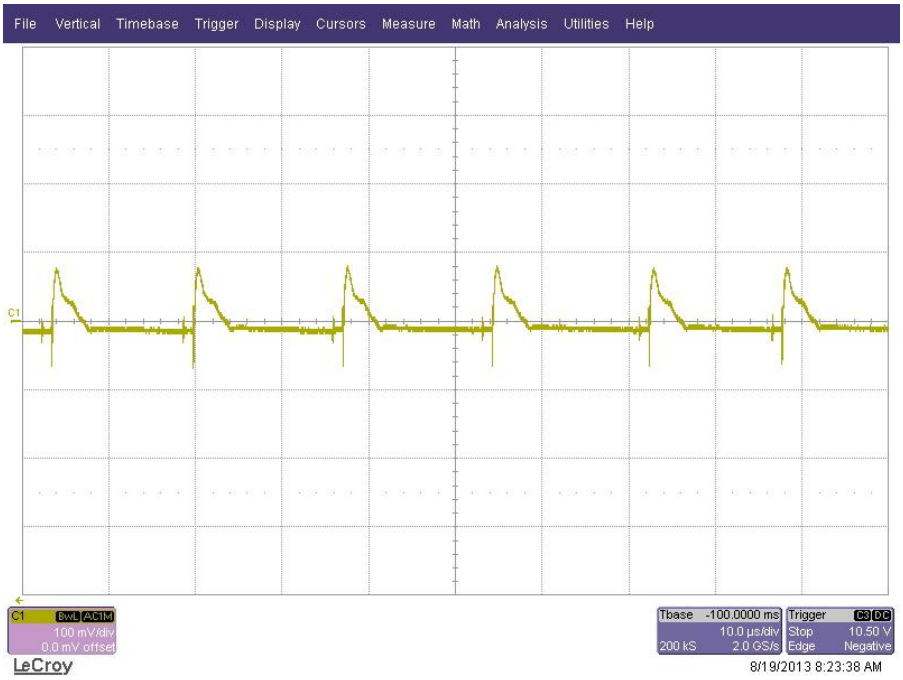
6 Output Ripple Voltages

The output ripple voltages are shown in the plots below.

6.1 120V/60Hz – 16V/0.25A



6.2 230V/50Hz – 16V/0.25A



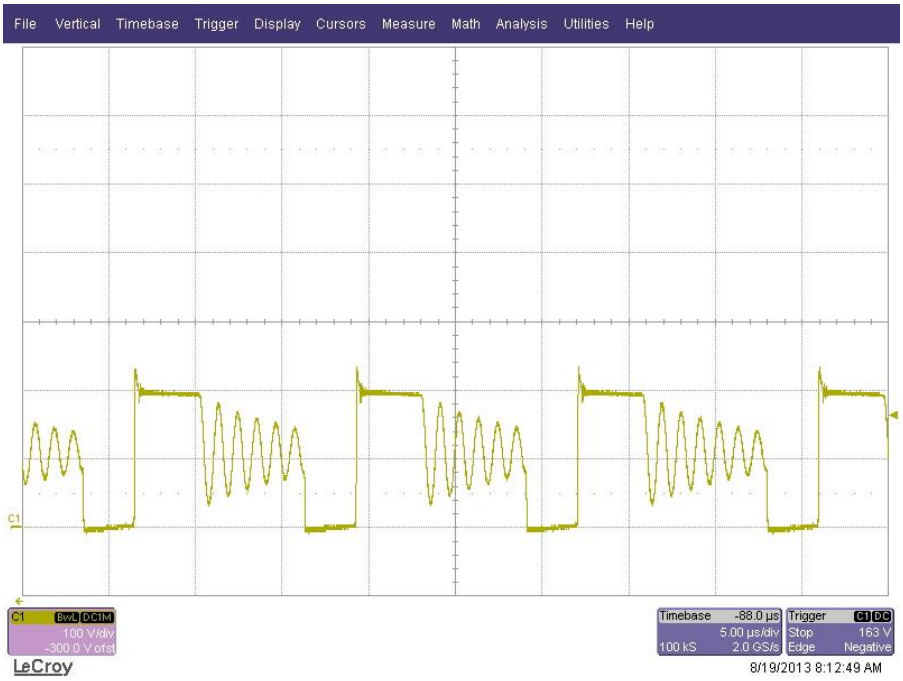
7 Load Transient

The image below shows 16V_{out} voltage response to a **0.12A** to **0.25A** load transient at a 120V_{ac}/60Hz input.

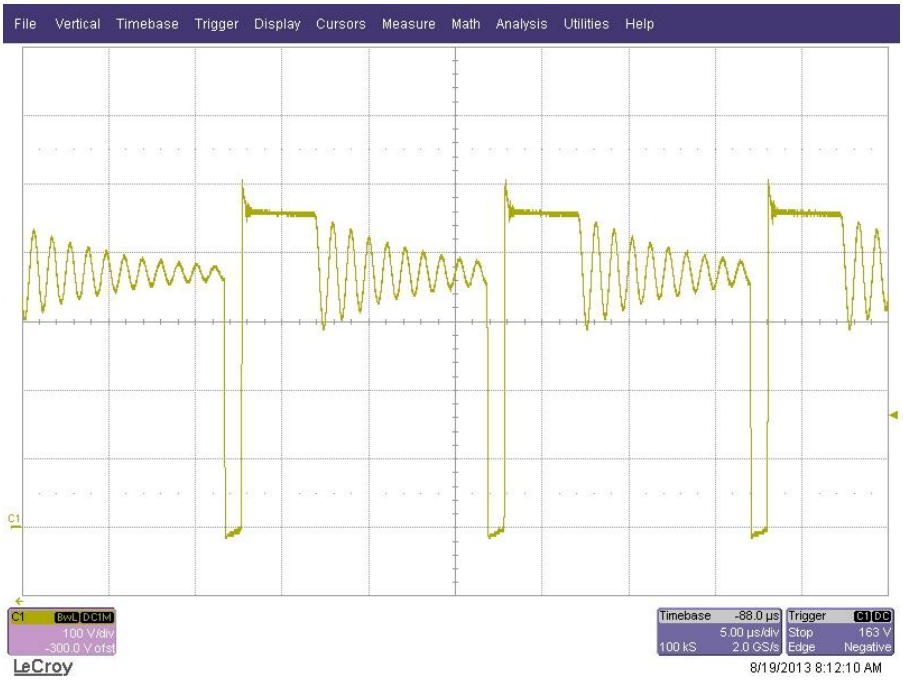
8 Switching Waveforms

The images below show key switching waveforms of PMP9061RevA. The waveforms are measured with 0.25A full load.

8.1 Primary MOSFET U1 pin8 @ 85V_{ac}/60Hz



8.2 Primary MOSFET U1 pin8 @ single phase 265V_{ac}/50Hz



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